

REMARKS

Applicants hereby enclose this Supplemental Amendment to supplement the previous Amendment (filed November 27, 2007). The Supplemental Amendment makes no changes to the claims and merely reproduces the claim amendments included in the previous Amendment. The Supplemental Amendment presents arguments in favor of patentability that were not included in the previous Amendment, and Applicants submit these arguments, in addition to the arguments contained in the previous Amendment, for the Examiner's consideration.

Rejections Under 35 U.S.C. § 103 – Hanaoka in view of Uchida

Claim 2 stands rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0067950 (“*Hanaoka*”) in view of U.S. Patent No. 6,301,278 (“*Uchida*”). Although claim 2 has been cancelled, Applicants have included limitations from claim 2 in the amended claim 1, and direct these arguments accordingly.

The Examiner asserts *Hanoaka* discloses all limitations of claim 2, with the exception of “wherein said submount is made of AlN.” Applicants submit that *Uchida* does not cure the deficiencies of *Hanoaka* discussed above, namely the failure to teach or suggest “a nitride-based semiconductor light-emitting element chip formed on an electrically conductive substrate, and a submount...said submount being made of a material having a thermal conductivity higher than that of a material used to form said electrically conductive material” as recited in claim 1.

Uchida allegedly teaches a semiconductor laser device including a semiconductor laser element that is said to be placed inside a package on an electrically conductive submount such that one of the electrodes with one conduction type sandwiching its p-n junction is electrically connected to it. The submount is allegedly placed on a metallic heat sink, separated therefrom by a layer of an electrical insulator having a larger thermal conductivity than the submount. (*Uchida*, Abstract). *Uchida* allegedly further teaches a semiconductor laser device “having an electrical insulator with a high thermal conductivity disposed between and in contact with a metallic heat sink and an electrically conductive, relatively inexpensive submount such as comprising Si.” (*Uchida* col. 3, lines 20-24). Applicants therefore submit that *Uchida* teaches “an electrical insulator having a larger thermal conductivity of the

submount," not a "submount being made of a material having a thermal conductivity higher than that of a material used to form said electrically conductive material" as recited by claim 1. Therefore, even the combination of *Hanoaka* and *Uchida* fails teach or suggest all limitations of claim 1, and cannot establish a *prima facie* case of obviousness according to M.P.E.P. §706.02(j).

Further, the Examiner alleges that *Uchida* discloses "the use of a submount made of AlN" and asserts "it would be obvious to a person of ordinary skill in the art at the time of invention to combine the submount made of AlN of *Uchida* with a nitride-based semiconductor light-emitting device of *Hanaoka* because this provides the thermally conductive submount instead of silicon. (see col. 2, lines 36-42 of *Uchida*)."
(*Office Action*, page 4). Applicants disagree for at least the reasons discussed below.

Uchida is said to teach that the semiconductor laser device can "be cooled more efficiently because the heat generated by its laser element 30 can be conducted off to the thermally conductive AlN submount 25' only through the Al pattern 40'." (*Uchida*, col. 2, lines 37-40). However, Applicants submit that a "thermally conductive AlN submount" does not teach or suggest the relationship described in claim 1, of a "submount being made of a material having a thermal conductivity higher than that of a material used to form said electrically conductive material."

Assuming *arguendo* that *Uchida* does teach or suggest the relationship recited in claim 1 (which Applicants do not believe or admit) *Uchida* teaches away from using a submount composed of AlN, despite its higher thermal conductivity relative to a submount composed of Si. According to *Uchida*, "if a laser element is unadjustably defective, the submount to which it is mounted is also discarded. Since silicon submounts are relatively inexpensive, the procedure described above is not impractical, not incurring a serious economical loss. Since AlN submounts are significantly more expensive (say, by a factor of several tens) than silicon submounts, the loss due to discarded AlN submounts can significantly affect the production cost of the laser devices." (*Uchida*, col. 2, lines 57-65). Thus, by revealing the "practical problem" of the "significantly more expensive" AlN submounts relative to Si submounts, *Uchida* discourages one of ordinary skill from using AlN submounts in combination with *Hanoaka*, and therefore the combination would not have been obvious to a person of ordinary skill.

Therefore, Applicants respectfully submit that the combination of *Hanoaka* and *Uchida* cannot serve as the basis for rejecting claim 1.

CONCLUSION

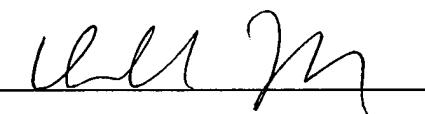
In view of the above remarks and amendments, Applicants respectfully submit that each of the rejections has been addressed and overcome, placing the present application in condition for allowance. A notice to that effect is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Andrew D. Kasnevich at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,
HARNESS, DICKEY, & PIERCE, P.L.C.

By


Donald J. Daley, Reg. No. 34,313

P.O. Box 8910
Reston, Virginia 20195
(703) 668-8000

DJD/ADK:krm
adk